

Wade O. Troxell
Curriculum Vitae

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Elected Position

Mayor (emeritus), City of Fort Collins

Mayor Troxell served as the 56th mayor of the City of Fort Collins, Colorado's fourth largest city. He was a three-term mayor of the City of Fort Collins serving from 2015 to 2021. Mayor Troxell won his 3rd term election with 73 percent of the vote on April 2, 2019. He was twice elected in 2007 and 2011 to the Fort Collins City Council representing District 4. Some notable accomplishments:

- Mayor Troxell received the US Mayors Challenge grant with a \$1.1 million Champion City award in November 2018 from Bloomberg Philanthropy.
- Mayor Troxell was appointed in June 2018 to the Drone Advisory Committee (now called the Advanced Aviation Advisory Committee) by US Secretary of Transportation Elaine Chao for a two-year term.
- Under Mayor Troxell's leadership, the City of Fort Collins was a 2017 recipient of the US Malcolm Baldrige National Quality Award. The City of Fort Collins was recognized for "an unceasing drive for innovation, leadership, and operational excellence."
- Mayor Troxell envisioned and formed a municipal philanthropy, called CityGive, to provide philanthropic giving opportunities for operational leverage to extend impact of world-class municipal amenities services.
- Mayor Troxell, envisioned and launched Connexion broadband utility from its initial concept discussion at Futures Committee to deployment 2011-2023.
- Mayor Troxell, first cohort of the Bloomberg Harvard City Leadership Initiative of 40 mayors in 2018.
- Mayor Troxell, Past President of the Colorado Municipal League (CML)
- Chaired the City's Disaster Committee that coordinated five notable disaster responses with federal, state, and local jurisdictions.
- Chair, Board of Directors, Platte River Power Authority,
- Chair, Northern Colorado Regional Airport Commission,
- FAA Drone Advisory Committee (DAC) as National League of Cities (NLC) municipally elected official representative, 2018-2020.

Mayor Troxell's additional accomplishments:

- University Cities, founding city as a new species of a city based on data-driven economic vitality and quality of life metrics. See [University Cities | A NEW SPECIES OF CITY](#)
- National League of Cities offering federal advocacy on Transportation and Infrastructure Services,

- National League of Cities Transportation Technology, Co-chair
- National League of Cities Universities Communities Council,
- GridWise Alliance, Board Member,
- Chair - City of Fort Collins Finance Committee,
- Chair - City of Fort Collins Future's Committee,
- President, Fort Collins Urban Renewal Authority Board,
- President, Fort Collins Water Utilities Enterprise
- President, Fort Collins Electric Utilities Enterprise
- Chair, Fort Collins Disaster Council/Policy Coordination Committee,
- Chair, Fort Collins Council Finance Committee,
- Governing magazine - advisory panel.

CSU Position

Associate Professor, Mechanical Engineering

- Dr. Troxell serves on the mechanical engineering faculty and is affiliated with the faculties of the Richardson Design Center, systems engineering, biomedical engineering, the Center for Ethics and Human Rights, and the Master's of Public Policy Administration.

Education

Executive Leadership: Bloomberg Harvard City Leadership Initiative, 2017-2021, Harvard School of Business and Harvard Kennedy School of Government.

Postdoctoral Fellow: NATO Postdoctoral Fellow, 1987-1988, Department of Artificial Intelligence, Edinburgh University.

Ph.D.: Mechanical Engineering, 1987, Colorado State University. Dissertation title, "Systematics for Automatic Planning in Robotic Assembly." The primary contribution was a generative artificial intelligent (AI) planner to task level robotic assembly processes. Major advisor: Dr. Gearold R. Johnson, Abell Professor of Computer Assisted Engineering.

MS: Mechanical Engineering, 1982, Colorado State University. Thesis title, "An Interactive Variable Force Exercise System." Major advisor: Dr. Gearold R. Johnson.

BS: Engineering Science, Bioengineering, 1980, Colorado State University.

Professional Experience

2021-present: Principal/CEO, Distributed Energy Futures, LLC.

2019-2021: Mayor, City of Fort Collins, Colorado in April 2019, 3rd term.

2017-2019: Mayor, City of Fort Collins, Colorado in April 2017, 2nd term.

2016-2021: Associate Department Head for Engagement and Development, Mechanical Engineering, Colorado State University.

- Dr. Troxell supported the department on the leadership team, development and engagement. He was responsible for donor relations with key prospects and identified and contracted corporate sponsors funded projects for senior design projects.
- Professor Troxell assisted the VP of Engagement on the CSU's value proposition as an urban serving university to the cities and towns in Colorado.
- Professor Troxell assisted the VP of Research enhancing the innovation and technology transfer processes and capabilities at CSU.
- Professor Troxell recruited capable international students from China and Kazakhstan.
- Professor Troxell collaborated with the College of Liberal Arts and the Department of Political Science on the development of the Straayer Center for Public Engagement and assisted in the creation a master's program in public administration.

2015-2017: Elected Mayor of the City of Fort Collins, Colorado on April 7, 2015, 1st term.

2015: Sabbatical Leave (6 month) from CSU.

2013: Dean (interim), College of Engineering, Colorado State University.

- Dr. Troxell has been recognized for his dedicated service two times with the Oliver P. Pennock Distinguished Service Award.
- The Pennock Award is in university-wide recognition of meritorious and outstanding achievement.

2007: Fellow (elected), American Society of Mechanical Engineers.

2004-2014: Associate Dean for Research and Economic Development, College of Engineering, Colorado State University.

- As the Associate Dean for Research and Economic Development in the College of Engineering, the FY14 research expenditures were more than \$63 million.
- This represented an increase of 70 percent during Dr. Troxell's 10 years as Associate Dean.
- To provide a basis for comparison to all CSU tenured and tenured track faculty, the engineering faculty makes up approximately 10 percent of CSU's T/TT faculty and 25 percent of the NSF funding to the institution.
- Using the metrics provided by the OVPR and Institutional Research, engineering faculty are the most productive at CSU in most areas including more than \$630,000 per faculty member in research expenditures comparing favorably to Carnegie RUVH peers such as UC-Berkeley or MIT in federal research expenditures/faculty-year.
- This level of faculty member productivity puts the College in the top ten of all U.S. engineering institutions for faculty productivity.

2007-2015: Elected to City Council, District 4 Council Member, Served 1st term, 2007-2011. Reelected for 2nd term, April 2011 – April 2015.

- 2005:** Acting Department Head, Department of Mechanical Engineering, Colorado State University
- 2004-2007:** ASME Senior Vice President, Knowledge and Community (K&C) Sector.
- Dr. Troxell is a Fellow of the American Society of Mechanical Engineers (ASME).
 - He is a past ASME Senior Vice President responsible for the Knowledge and Community Sector.
 - He is a two-time recipient of the Distinguished Service Award, in 1999 and 2007.
- 2002-2005:** Associate Department Head, Mechanical Engineering, Colorado State University
- 1994-present:** Associate Professor with tenure, Mechanical Engineering, Colorado State University.
- 2000-2007:** Founder, Principal., Powertech Investments, LLC., Fort Collins, Colorado. Powertech Investments as an investment fund for early stage startups in the power technology sector.
- 1997-2001:** Founder, President/COO and Board Director, Sixth Dimension, Inc., Fort Collins, Colorado and Fremont, California.
- Dr. Troxell co-founded Sixth Dimension, Inc., a provider of network communications and real-time control technology for the electric power industry integrating in distributed energy resources.
 - As President/COO, he led this early-staged company through three rounds of venture financing (\$18 million) involving some of the top energy venture firms. Sixth Dimension was acquired by Comverge in 2002.
- 1998-present:** Director, Robotic and Autonomous Machines (RAM) Laboratory, Mechanical Engineering, Colorado State University.
- RamLab (Robotic and Autonomous Machines Laboratory) provides educational, research and outreach activities with support from industrial and federal sources. Dr. Troxell is an internationally recognized expert in the areas of intelligent robotics and distributed energy systems.
 - Dr. Troxell is a founding/emeritus member of the U.S. Department of Energy's GridWise Architectural Council and serves on the GridWise Alliance as a Board member.
 - He is a founding member of the Colorado Clean Energy Cluster, Colorado Water Innovation Cluster and the International Cleantech Network.
 - He has served on the State of Colorado's Smart Grid Task Force.
 - His smart grid research has focused on intelligent systems and the integration of the distributed energy resources (DER).
 - The RAM Lab takes a systems approach towards innovative research with the aim of furthering a secure and modernized the electric power infrastructure.
 - A key facility of the RAM Lab is the InteGrid Laboratory developed in partnership with Spirae, Inc., at Powerhouse campus.

- With the City of Fort Collins, Spira, and other partners, we have been awarded a DOE Renewable and Distributed Systems Integration (RDSI) smart grid demonstration project called FortZED.

1997-1998: Sabbatical Leave

- Research at Storage Technology Corporation with the Vice President of Engineering and Manufacturing related to the product realization process, low-cost global manufacturing, and design for manufacturing, Multi-platform Business Group, Storage Technology Corporation, Louisville, Colorado.

1995-1998: Vice President, American Society of Mechanical Engineers (ASME) – International, Region XII – Rocky Mountains.

1994-1995: Dean (Interim), Technical Education Division, Pueblo Community College.

- Dr. Troxell served as the Interim Dean at Pueblo Community College to create and build the \$10 million Gorsuch Advanced Technology Center. This initiative helped to bridge a chasm between Colorado's community college system and Colorado's research institutions for better articulation and inclusiveness including STEM education.

1992-1997: Executive Director, Mid-America Manufacturing Technology Center - Colorado Regional Office.

- Dr. Troxell established Colorado's NIST-funded Manufacturing Extension Partnership (MEP) center in Colorado and Wyoming.
- He served as its Executive Director from 1992 to 1997.
- Colorado's MEP is called Manufacturer's Edge.

1988-1998: Director, Manufacturing Excellence Center, Colorado State University.

- From 1988 to 1998, Dr. Troxell co-founded and directed the Manufacturing Excellence Center (MEC) at CSU.
- MEC was a consortium of 41 laboratories and centers focused on improving the competitiveness and profitability of small to medium-sized manufacturers in Colorado.

1988-1994: Assistant Professor, Mechanical Engineering, Colorado State University.

1988-1991: Associate Director, Manufacturing Excellence Center, Colorado State University.

1988--1998: Director, Manufacturing and Robotic Systems Laboratory, Mechanical Engineering, Colorado State University.

- 1988-1990:** Robotic consultant to the Public Service Company of Colorado, Nuclear Engineering Division, Fort St. Vrain Station on the controller retrofit of the fuel handling robot.
- 1987-1988:** NATO Postdoctoral Fellow, Department of Artificial Intelligence, Edinburgh University. Conducted research with Dr. Tim Smithers on the Edinburgh Designer System (EDS) and intelligent robotic systems. 12 months.
- 1985-1988:** Instructor, Mechanical Engineering, Colorado State University.
- 1981-1986:** Consultant specializing in biomechanics and sports medicine computer applications.
- 1984-1985:** Graduate Teaching Assistantship, Mechanical Engineering, Colorado State University.
- 1982-1984:** Mechanical Engineer, Eastman Kodak Company, Kodak Colorado Division, Windsor, Colorado.
- 1980-1982:** Graduate Teaching and Research Assistantships, Mechanical Engineering, Colorado State University.
- 1980:** Consulting bioengineer, Staodynamics, Inc., Longmont, Colorado.

Honors and Awards

- Awarded the “Sam Mamet Good Governance Award” by the Colorado Municipal League, 2021. The Sam Mamet Good Governance Award, established in 2019 in honor of retired CML Executive Director Sam Mamet, honors an individual who exemplifies and seeks to expand the application of principles of good governance.
- Awarded the “Heroes For Homeless Families” Award, Family Housing Network (FHN) of Fort Collins, May 2019.
- “Service Above Self” Award presented by the Fort Collins Rotary Club, April 2019.
- Freemasons Fidelity Lodge No. 192, Certificate of Appreciation “for many years of noteworthy contributions to the community and citizens of Fort Collins with education, service and civic responsibility.” March 23, 2019.
- US Mayor Challenge award of \$1.1 million as Champion City by the Bloomberg Philanthropies in November 2018.
- Mayor Troxell was appointed in June 2018 to the Drone Advisory Committee by US Secretary of Transportation Secretary Elaine Chao for a two-year term.
- Mayor Troxell completed the first cohort of the Bloomberg Harvard City Leadership Initiative of 40 mayors in 2018.
- 2018 Mayors Challenge, Bloomberg Philanthropies, Champion Cities, Climate Economy.
- 2018 Confucius Institute Service Award, Colorado State University.

- 2017 Malcolm Baldrige National Quality Award recipient, City of Fort Collins, recognized for unceasing drive for radical innovation, thoughtful leadership, and administrative improvements.
- Bloomberg Harvard City Leadership Initiative, 30 mayors from US and 10 international mayors in 1st cohort, Kennedy School of Government and Business School, Harvard University, New York City, NY. 2017-2018.
- CSU Pennock Distinguished Service Award in recognition of Meritorious and Outstanding Achievement, Colorado State University, April 2017. Second time received.
- National League of Cities University Communities Council Appreciation Award for leader advocacy for university communities, November 2016.
- Colorado State Senate appointment to the Colorado Smart Grid Task Force to produce a report to the Governor, State Legislature, and Public Utility Commission on future directions of an advanced electric grid in Colorado. 2010-2011. .
- Fellow, American Society of Mechanical Engineers, 2007.
- American Society of Mechanical Engineers Distinguished Service Award, 2007.
- Oliver P. Pennock Distinguished Service Award in recognition of Meritorious and Outstanding Achievement, Colorado State University, April 2007.
- George T. Abell Award for Outstanding Contributions to Economic Development, College of Engineering, Colorado State University, April 2007.
- American Society of Mechanical Engineers Board of Governors Recognition Award, for the Board on Early Career Development. 2001-2005.
- American Society of Mechanical Engineers Board of Governors Recognition Award, Committee on Organization and Rules. 2003-2004.
- American Society of Mechanical Engineers Board of Governors Recognition Award, Advisor to the Senior Vice President, 2001-2004.
- Qwest Dex Excellence in Education Award, October 27, 2001, in recognition of helping to shape the future of education.
- Angel Quest Economic Impact Award presented by the Fort Collins Virtual Business Incubator,
- Finalist as Bravo! Emerging Entrepreneur Award presented by the Northern Colorado Business Report, 2001.
- American Society of Mechanical Engineers Distinguished Service Award, 2000.
- American Society of Mechanical Engineers Board of Governors Recognition Award, Advisor to the Senior Vice President, 1998-2001
- American Society of Mechanical Engineers Board of Governors Recognition Award, Vice President, 1995-1998.
- Special Recognition Award, Pueblo Community College, 1995.
- American Society of Mechanical Engineers Board of Governors Recognition Award, Vice President-Elect and NSSC Senior Representative, Region XII, 1993-1995.
- American Society of Mechanical Engineers Board of Governors Recognition Award, Region XII Operating Board, College Relations, 1991-94.
- Honor Alumnus, Poudre High School, Fort Collins, Colorado. 1993.
- Greater Englewood Chamber of Commerce Appreciation Award, 1993.

- American Society of Mechanical Engineers Council on Member Affairs Recognition Award, Winter Annual Meeting Faculty Advisor Program, 1992.
- Halliburton Faculty Teaching Award of Excellence, Halliburton Foundation, Inc., 1992.
- Inventor recognition award, Colorado State University Research Foundation, 1992,
- Storage Technology Corporation, ``Person-to-Person" Recognition Award, 1992.
- National Quality and Business Development Foundation and the Society of Manufacturing Engineers Appreciation Award in recognition for participation in TQM `90, August 1990.
- American Society of Mechanical Engineers Outstanding Mechanical Engineering Faculty Member, CSU Student Chapter, 1990-91.
- Society of Manufacturing Engineers Appreciation Award in recognition for substantial contribution to the computer-integrated manufacturing industry, November 1989.
- American Society of Mechanical Engineers Board of Governors Faculty Advisor Recognition, 1988-1991.
- American Society of Mechanical Engineers Outstanding Mechanical Engineering Faculty Member, CSU Student Chapter, 1988-1990.
- NATO Postdoctoral Fellow, 1987-1988.
- First place award in the AIAA Region V Senior Paper Presentation, 1980.
- Engineering Design Award, first place, freshman (1976) and senior years (1980).
- Elected vice-president Engineering Legislature, senior year, 1979-1980.
- Four-year letterman and three-year starter at offensive center on the Colorado State University football team, 1975-1978.
- Selected honorable mention All-Western Athletic Conference football team, junior year, 1977.
- Captained the Colorado State University football team, senior year, 1978.

Board Appointments, Advisory Positions, and Memberships

Board Positions

- Realities for Children, Board, 2022-present.
- Neighbor to Neighbor, Capital Fund Raising co-chair, 2023
- GridWise Alliance, Board, 2016-2022.
- Platte River Power Authority, Board and Chair, 2015-2021.
- Colorado Municipal League, Executive Board and President, 2015-2020.
- Northern Colorado Regional Airport (FNL) Commission and Chair, 2015-2021.
- National League of Cities – Transportation Infrastructure Services. 2012-2021.
- International Cleantech Network, Founder and Manager, 2010-2015.
- Colorado Clean Energy Cluster, Co-Founder and Board member, 2005-2015.
- Colorado Water Innovation Cluster, Vice Chair, Co-Founder and Board member, 2010-2015.
- Colorado Energy Research Collaboratory (formally known as the Colorado Renewable Energy Collaboratory), Founding Executive Committee Member and CSU Institutional Coordinator, 2005-2014.

- CSU Alumni Association, Board of Directors, 2003-2009.
- Northern Colorado Idea Laboratory (NCIL), Board of Advisors, 2003-2006.
- The Brendle Group - Advisory Board, 2002-2007.
- Powertech Investments, LLC, Founder and Manager, 2001-2008.
- Sixth Dimension, Inc., Cofounder and Board Member, 1997-2001.
- First Presbyterian Church Foundation, Board of Directors, 1997-2009.
- Boulder Technology Incubator, Advisor to the Board of Directors, 1995-2002.

Professional Societies Memberships

- Fellow, American Society of Mechanical Engineers (ASME)
- Lifetime member, American Society of Mechanical Engineers
- Member, American Society of Engineering Educators (ASEE)
- Member, Institute for Electrical and Electronics Engineers (IEEE)
- Tau Beta Pi - national engineering honorary society
- Order of the Engineer

Advisory to Professional Societies

- ASME Robotics Technology Group, 2020-present.
- ASME Robotics Public Policy Task Force, 2016-present.
- ASME ROE Medal Committee, 2012-2020.
- ASME Inter-Sector Committee for Federal R & D, present.
- ASME Student Professional Development Conferences (SPDC) Transition Team, 2010-2011.
- ASME Senior Vice President, Knowledge and Community (K&C) Sector, term 2004-2007.
- ASME Inter-Sector Committee for Federal R & D, 2005-present.
- ASME Project Management Task Force, 2004-2005.
- ASME Committee on Organization and Rules, 2003-2004.
- ASME Board on Young Engineers, 2002-2004.
- Engineer's Week 2005 Committee, ASME, 2002-present.
- SAE Walking Machine Challenge, Rules Committee, 2002-2003
- ASME Council of Member Affairs, Advisor to the Senior Vice President, 1998-2002.
- ASME Chair, Distinguished Lecturers Program, 1998-present.
- ASME Chair, ASME/NIST Interaction Committee, 1998-2007.
- ASME/SME Merger Task Force (Membership), 1999.
- ASME Vice President for Region XII, 1995-1998. Region XII includes 8 sections and 22 student sections covering a six-state region and part of Mexico.
- ASME Board on Student Affairs as the Council on Member Affairs representative, 1997-1998.
- ASME Chairperson, Distinguished Lecturer Program, 1997-1999.
- ASME Information and Communication Systems Subcommittee of CPO, 1996-1997.
- ASME Small Business Committee Co-chair, 1996-1998.
- IEEE Design Automation Technical Committee, 1996-1997.
- ASME Region XII Vice President-Elect, 1994-1995.

- ASME National Student Sections Committee, Senior Representative Region XII, 1993-1995.
- ASME Region XII Operating Board, Student and Young Engineers Committee Chair, 1993-1995.
- ASME Region XII Operating Board, College Relations, 1991-1993.
- Faculty advisor, ASME and ASHRAE Colorado State University Student Chapters, 1988-1991

Professional Registration

- Engineer-in-training, State of Colorado

Professional Service

Expert Witness/SME

- Distributed Energy Resources – subject matter expert to electric utilities and technology companies.
- Intelligent Control of Robots/Autonomous Vehicles/Unmanned Aviation Systems – subject matter expert to platform technology and applications.
- Trade Secrets related to manufacturing process capability and new product development
- Patent Infringement related to form, function, and fabrication of high technology devices.
- Product Liability related to biomechanics, sports, and recreation.

Other Academic Affiliations

- National Technological University (NTU) – largest graduate distance engineering program in the world, served as Chair and Advisor, Mechanical Engineering Program, 1999-2003.
- National Technological University, Curriculum Committee Member and Advisor, Manufacturing Systems Engineering Program, 1998-2003.
- Massachusetts Institute of Technology, The Lemelson-MIT Prize Program nominator, 1997-2003.
- Metropolitan State College of Denver, Mechanical Engineering Technology Department, Advisory Board Member.

Academic External Examinations and Accreditation

- University of Colorado at Denver, Academic Program Review, College of Engineering and Applied Science, 2014.
- Ngee Ann Polytechnic University, Singapore, External Examiner of the Mechanical Engineering program, 2000 and 2001.
- University of Colorado at Denver, Regent's Academic Program Review, College of Engineering and Applied Science, 1996.

- Council for National Academic Awards -- United Kingdom, Thames Polytechnic University, 1990

Conference, Workshop, and Symposia Committees

- 2023 Eleventh International Conference on Engineering Education for Sustainable Development (EESD2023) June 2023, Colorado State University, Fort Collins, CO.
- 2007: International Conference on Design Computing and Cognition (DCC07), paper reviewer.
- 2004 First International Conference on Design Computing and Cognition (DCC04), Advisory Board.
- 2002 Seventh International Conference on Artificial Intelligence in Design (AID2000), Advisory Board.
- 2000 Sixth International Conference on Artificial Intelligence in Design (AID2000), Advisory Board.
- 1996 Fourth International Conference on Artificial Intelligence in Design (AID'96) held 24-27 June 1996 at Stanford University, Advisory Board.
- 1995 International Vehicles '95 Conference, Organizing Committee
- 1993 International Conference on the Management of Technology -- Design for Competitiveness, Program Co-chair
- 1993 ASME Region XII Graduate Student Technical Conference, Regional Coordinator
- 1992 "Deliverance from the Dilemma," Instrument Society of America, Local Chair
- 1991 ASME Region XII Graduate Student Technical Conference, Conference Chair
- MEC '90 Workshop Coordinator
- 1990 Third International Symposium on Robotics and Manufacturing, International Manufacturing Program Committee
- 1990 First International Workshop on Formal Methods in Engineering Design, Manufacturing, and Assembly, Manufacturing and Assembly Program Committee and Session Chair.

Review Panels: Program, Book, Manuscript, and Proposal

- 2023 NSF Review Panel – Civic Innovation Challenge
- 2022 NSF Panel – Civic Innovation Challenge
- 2010-2016 National Renewable Energy Laboratory (NREL) Wind Technical Review Panel
- 2007: International Conference on Design Computing and Cognition (DCC07), paper reviewer.
- 2005 ACM International Conference on Computing Frontiers, Ischia, Italy, May 2005, sponsored by ACM – SIGMICRO, paper reviewer.
- 2004: First International Conference on Design Computing and Cognition (DCC04), paper reviewer.
- 2002-2004: Battelle Pacific Northwest National Laboratory, Laboratory Directed Research and Development Initiative, Advisory Review Panel Member.

- 2003-present: International Journal of Engine Research, manuscript reviewer.
- 2002-present: Robotics Panel of the ASME Dynamic Systems and Control Division
- 2002 Seventh International Conference on Artificial Intelligence in Design, Technical paper reviewer.
- ASME Peer Reviewer to assess robotic technologies supported by the U.S. Office of Science and Technology, Department of Energy.
- Editorial review Board for the International Society of Agile Manufacturing that oversees two journals: The International Journal of Advanced Manufacturing Systems and The International Journal of Agile Manufacturing.
- Member of the Advisory Board to the 5th International Conference on AI in Design held June 1998.
- 1997-present: IEEE Concurrency, manuscript reviewer
- 1997-present: IEEE Computer, manuscript reviewer
- 1997 Manuscript reviewer to the Journal of Design and Manufacturing, the research journal concurrent engineering.
- 1997-present: Manuscript reviewer for the IIE Transactions on focused issues on Design and Manufacturing.
- Member of the Advisory Board to the 4th International Conference on AI in Design held June 1996 at Stanford University.
- 1996 Colorado Advanced Software Institute proposal reviewer.
- 1995 Journal of Design and Manufacturing, manuscript review
- 1994 IEEE Computer, manuscript review
- 1994, Artificial Intelligence in Design, Workshop on the Nature and Role of AI in Design Research, Advisory Committee.
- 1993, Design and Implementation of Intelligent Manufacturing Systems, Chapman and Hall, London, M. Jamshidi and H. Parsaei, editors.
- 1992 IEEE Computer, manuscript review
- 1992 10th Annual IEEE Software Reliability Symposium, paper reviewer
- 1992 Colorado Advanced Software Institute, proposal reviewer
- 1992 Journal of Design and Manufacturing, paper reviewer
- 1989-1991 Colorado Institute for Artificial Intelligence, research program audit reviewer
- 1989-1991 Colorado Institute for Artificial Intelligence, proposal reviewer
- 1989 Rocky Mountain Conference on Artificial Intelligence, paper reviewer
- 1987 ASME Computers in Engineering Conference, paper reviewer
- 1987 Rocky Mountain Conference on Artificial Intelligence, paper reviewer

Publications

Wade Troxell, Guest Commentary, Denver Post, “Drones, Drones Everywhere, But Who Is Accountable?”, January 27, 2020,
<https://www.denverpost.com/2020/01/27/guestcommentary-drones-drones-everywhere-but-who-is-accountable/>

Graeme Troxell and Wade Troxell, "A Reflective Analysis on Professional Codes of Ethics," 2017 ASEE Conference and Exposition, Columbus, Ohio, June 25-28, 2017.

Tom Siller, Gearold Johnson and Wade Troxell, "What do Sustaining Life and Sustainable Engineering have in Common?", Chapter in Springer – World Sustainability Series, Editors Walter Leal Filho and Susan Nesbit: NEW DEVELOPMENTS IN ENGINEERING EDUCATION FOR SUSTAINABLE DEVELOPMENT, 978-3-319-32932-1.

Tom Siller, Gearold Johnson and Wade Troxell, "What do Sustaining Life and Sustainable Engineering have in Common?", presented at Engineering Education for Sustainable Development 2015, ISSN: 2199-7373/2016.

Wade Troxell and Graeme Troxell, "Towards a Philosophy of Engineering," IEEE ETHICS, 2014 IEEE International Symposium on Ethics in Engineering, Science and Technology, May 23, 2014.

Wade O. Troxell, "Entrepreneurial Collaborators meet Collaborative Communities," Career Planning and Adult Development Journal, Volume 27, Number 4, Winter 2011-2012.

De Miranda, M. A., Troxell, W.O., Siller, T. J., & Iverson, E. (2008). Preparing technology teachers to infuse engineering into technology education: Pre-service, professional development, and outreach. In R. L. Custer, & T. L. Erikson, *Engineering and Technology Education 57* (pp. 133-157). Woodland Hills, CA: Glencoe/McGraw Hill.

David C. Paulus, Raoul F. Reiser II, Wade O. Troxell, "Peak Lifting Velocities of Men and Women for the Reduced Inertia Squat Exercise Using Force Control," European Journal of Applied Physiology, Volume 102, Number 3, 2007.

Carl Kaiser, Wade Troxell, and Mike Conboy, "Interaction Spaces for Urban Search and Rescue Robots," International Joint Topical: 9th Emergency Preparedness and Response/ 11th Robotics and Remote Systems for Hazardous Environments, Salt Lake City, Utah, February 2006.

Mike Conboy, Wade Troxell, and Carl Kaiser, "A Variable Geometry Tracked Robot for Urban Search and Rescue," International Joint Topical: 9th Emergency Preparedness and Response/11th Robotics and Remote Systems for Hazardous Environments, Salt Lake City, Utah, February 2006.

David Paulus, Raoul Reiser, and Wade Troxell, "Peak Lifting Velocity with Resistance Force Based on Isometric Assessment," American College of Sports Medicine, Denver, Colorado, June 2006.

Carl Kaiser and Wade Troxell, "Student Design Competitions in Undergraduate Engineering Education," ASEE Frontiers in Education Conference, October 2005.

Carl Kaiser and Wade Troxell, "Student Design Competitions in Undergraduate Engineering Education," WFEO/ASEE e-Conference, Beijing, China, September 2004.

Wade O. Troxell and Patrick Dawson, "A Gap Analysis of Combined Heat and Power with Gas Turbines at Colorado State University," IEEE Power Engineering Conference, New York, NY, September 2004.

Wade O. Troxell and Patrick Dawson, "Discovering Appropriate Cogeneration Opportunities," *Energy Pulse*, May 10, 2004, http://www.energypulse.net/centers/article/article_display.cfm?a_id=713

Patrick Dawson and Wade O. Troxell, "A Gap Analysis of Combined Heat and Power with Gas Turbines at Colorado State University," submitted to the IEEE Power Engineering Society's 2004 Power Systems Conference and Exposition (PSCE'04), October 2004.

Wade Troxell and Jessica C. Fischer, "The Future of Reliable Power: A Net Energy Case Study at CSU," *Energy Pulse*, April 7, 2004, http://www.energypulse.net/centers/article/article_display.cfm?a_id=667.

Wade Troxell and Joe Fuetsch, "The Essence of Device Communication Tied with Distributed Energy," *Energy Pulse*, March 24, 2004, http://www.energypulse.net/centers/article/article_display.cfm?a_id=650

David C. Paulus, Raoul F. Reiser II, and Wade O. Troxell, "Pneumatic Strength Assessment Device: Design and Isometric Measurement," 41st International ISA Biomedical Sciences Instrumentation Symposium, April 2004.

G.E. Cook, A.S. Jacoff, S. Kou, R. Rosenberg, D.O. Thompson, W.O. Troxell, Technical Peer Review Report "Spent Nuclear Fuel (SNF) Canister Welding Concepts," ASME/DRTD-RP-04-03, ASME Press, 2003.

John J. Woods, Kristin L. Woods, Wade O. Troxell, "Empirical Analysis Using Advanced Similarity Methods," Paper no. DETC2002/DAC-34082 pp. 429-438, ASME 2002 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, September 29–October 2, 2002, Montreal, Quebec, Canada.

E.A. Corson, T. Hendrikson, M. Kirkland, P. Lederman, J. Martin, W. Troxell, R. Wilson. Technical Peer Review Report on "Requirements for Disposal of Remote-Handled Transuranic Wastes at the Waste Isolation Pilot Plant," Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-84, 2001.

D. R. Hopkins, T. A. Hendrickson, K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on "Automated Packaging of Nuclear Material," Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-11, 2001.

D. R. Hopkins, T. A. Hendrickson, K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on "Plutonium Thermal Treatment Furnace Load-Out System," Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-12, 2001.

D. R. Hopkins, T. A. Hendrickson, K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on "Optimal Plutonium Precipitation for Stabilization Feed Preparation," Assessment of Technologies Supported by the Office of Science and

Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-13, 2001.

D. R. Hopkins, T. A. Hendrickson, K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on “Removal of Plutonium Contamination from Uranium Metal Surface,” Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-14, 2001.

D. R. Hopkins, T. A. Hendrickson, K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on “Decontamination of Uranium Parts Using Laser Ablation,” Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-15, 2001.

D. R. Hopkins, T. A. Hendrickson, , K. K. Nielson, A. Schneider, and W. O. Troxell. Technical Peer Review Report on “Removal of Plutonium Contamination,” Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 2001, ASME Press, ASME/CRTD-RP-01-16, 2001.

S. Shina and W. Troxell, E-engineering: Steps to Collaborative Design using the Internet and Supply Chain, National Technological University, Video course publication, 2000,

Keith L. Bearden, Mark L. Nowack, and Wade Troxell, “A Behavior-based Autonomous Agent Possessing System Detectable Error,” ASME IMECE 2000 Dynamics and Systems Control Division, November 2000, Florida.

Jason G. Fleischer and Wade O. Troxell, “Bio-mimicry as a Tool in the Design of Robotic Systems,” 3rd International Conference on Engineering Design and Automation, August 1999 Vancouver, British Columbia, Canada.

F. Bzorgi, J. Hurst, F. Klemens, J. Liscouski, J. Solsky, C. Woods, and W. O. Troxell. Technical Peer Review Report on Chemical Analysis Automation, Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 1999, ASME Press, ASME/CRTD-RP-99-15, 1999.

W. O. Troxell, R. Kohout, K. K. Nielson, and D. A. Orth, Technical Peer Review Report on HANDSS-55, Assessment of Technologies Supported by the Office of Science and Technology Department of Energy: Results of the Peer Review for Fiscal Year 1999, ASME Press, ASME/CRTD-RP-99-05, 1999.

Stephen Dominic, Rodney Price, and Wade Troxell, “Agent-Based Adaptive Parallelism,” Euromicro 3rd International Conference on Massively Parallel Computing Systems, April 1998.

Wade O. Troxell and Sunil Cherian. Book review of Intelligent Behavior in Animals and Robots by David McFarland and Thomas Bosser. Minds and Machines: Journal for Artificial Intelligence, Philosophy, and Cognitive Science, 1995. Kluwer Academic Publishers, Volume 7, Number 3, December 1997.

Wade O. Troxell and Sunil Cherian. "An Exploration-based Model for the Product Realization Process," Agile Manufacturing ICAM'97, February 23, 1997.

Wade O. Troxell and Sunil Cherian. Book review of Computers, Minds, and Robots by William S. Robinson. Minds and Machines: Journal for Artificial Intelligence, Philosophy, and Cognitive Science, 1995. Kluwer Academic Publishers, Volume 6, Number 3, Pages 407-412, October 1996.

Wade O. Troxell, "Serving Small Manufacturers," ASME News, November 1996, Volume 15, Number 3.

Wade O. Troxell, "Service-Learning using Domestic Hot Water System Project in Senior Design," SEAMS Campus Compact, August 1996, pages 44-48.

Wade O. Troxell, Sunil Cherian, and Bud Vos, AI in Design: Agent and Web-based Design Environments, Stanford University, June 23, 1996.

Wade O. Troxell and Sunil Cherian. Intelligent behavior in machines emerging from a collection of interactive control structures. Computational Intelligence, 11(4):565--592, November 1995. Blackwell Publishers. Cambridge, Mass. and Oxford, UK.

W. O. Troxell, V. Huffaker, and W. F. Maulsby. Design and Implementation of Intelligent Manufacturing Systems, chapter Fault Diagnosis of Large Physical Processes. Environmental and Intelligent Manufacturing Systems Series. Prentice-Hall, 1995. Hamid R. Rarsaei and Mo Jamshidi, editors.

Sunil Cherian and Wade Troxell. Interactivism: A functional model of representation for behavior-based systems. In 3rd European Conference on Artificial Life, 1995. Springer Verlag. ISBN 3-540-59496-5.

Sunil Cherian and Wade Troxell. Object representation through interaction in autonomous robotic systems. In Seventh Portuguese Conference on Artificial Intelligence, 1995. Springer Verlag.

Sunil Cherian and Wade Troxell. A distributed control strategy for generating useful behavior in animats. Artificial Life IV, 1994. MIT Press.

Wade Troxell, et al., Team Approach to Concurrent Engineering: A Case Study. A book chapter in Successful Implementation of Concurrent Engineering Products and Products, S. Shina, editor, Van Nostrand Reinhold, New York, 1993. Book chapter.

Jon D. Clark and Wade O. Troxell, editors. Design for competitiveness. Proceedings of the International Conference on Technology Management. Denver, Colorado, April 1993, Manufacturing Excellence Center Press.

Sunil Cherian and Wade Troxell. Robot locomotion control with a network oscillator. In S. Wilson, H Roitblat, and J.A. Meyer, editors, Simulation of Adaptive Behavior: From Animals to Animats, 1992. MIT Press/Bradford Books.

S. Cherian, W. Troxell, and M. Ali. Design of a behavior-based micro-rover robot. In I. Masaki, editor, Intelligent Vehicles '92, 1992. IEEE Industrial Electronics Society, IEEE.

Wade O. Troxell, B. D. Willson, and S. Cherian. Goal-directed, self-improving control of internal combustion engines. Technical Report CASI-TR-93-09, Colorado Advanced Software Institute, Colorado Advanced Technology Institute, November 1992. FY1992 Technology Transfer Grant Final Report.

David Zenger, Wade Troxell, and Sammy Shina. NSF faculty enhancement program participant in design for manufacture. Technical report, University of Massachusetts Lowell, James Francis College of Engineering, Department of Mechanical Engineering, Lowell, Massachusetts. April 17, 1992.

W. O. Troxell, V. Huffaker, and W. F. Maulsby. Fault diagnosis of large physical processes. Technical Report CASI-TR- 92-05, Colorado Advanced Software Institute, Colorado Advanced Technology Institute, 1625 Broadway, Denver, Colorado, 80202, November 1992. FY1991 Technology Transfer Grant Final Report.

Wade O. Troxell. Exploration-based design synthesis through reverse engineering. In Dave Corne and Brian Logan, editors, Workshop on Search-based and Exploration-based Models of Design Process, Carnegie Mellon University, Pittsburgh, Penn., June 1992. 2nd International Conference on Artificial Intelligence in Design. Invited paper.

Wade Troxell and Jeremy Davis. Task-achieving modules in robot programming. In K. Tanie and A. Kak, editors, 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, North Carolina, July 1992. IEEE and the Robotics Society of Japan, IEEE.

S. Cherian, A. Sjostrom, and W. Troxell. Neuro-control using temporal dynamics for robot locomotion. In W. E. Snyder and A. A. Frolov, editors, 1992 IEEE/RNNS Symposium on Neuroinformatics and Neurocomputing, Rostov-on-Don, Russia, October 1992. IEEE and the Russian Neural Networks Society, IEEE.

Wade O. Troxell. Design synthesis through reverse engineering. In Col. Ray Richardson, editor, ASEE Rocky Mountain Section Annual Meeting, U.S. Air Force Academy, April 1992. American Society of Engineering Educators. Invited paper.

W. O. Troxell, B. D. Willson, and S. Cherian. A self-improving, behavior-based controller for internal combustion engines. Technical Report CASI-TR- 92-08, Colorado Advanced Software Institute, Colorado Advanced Technology Institute, 1625 Broadway, Denver, Colorado, 80202, November 1992. FY1991 Technology Transfer Grant Final Report.

Wade Troxell. Verification of robot software. In Matt Lyden, editor, Handbook of Manufacturing, Automation, and Integration . Auerbach Publishers, 1991.

VR. Annadata, P. A. Fitzhorn, and W. O. Troxell. An assembly grammar for soma-n shapes. Journal of Design and Manufacturing, 1:35--45, 1991. Chapman and Hall.

Tim Smithers and Wade Troxell. Design is intelligent behavior, but what is the formalism? (AI EDAM) Artificial Intelligence in Engineering, Design, Assembly, and Manufacturing, 4(2):89--98, 1991. Academic Press.

Wade O. Troxell, editor. Robotic assembly. Kinkos Professor Publishing, Spring 1991. ME/EE 572 course notes.

Wade O. Troxell. To verify robot software, look at manufacturing context. CIM Review, 6(3):22--29, Spring 1990. Auerbach Publishers.

W. O. Troxell, B. D. Willson, and C. B. Winn. The center of the bottom-line. In Total Quality Management Conference and Exhibition, Colorado Springs, Colorado, August 1990. Sponsored by the Society of Manufacturing Engineers and The National Quality and Business Development Foundation.

W. O. Troxell. Eliminating the context-free engineering curriculum. In American Society of Engineering Educators, Golden, Colorado, April 1990.

T. Smithers and W. O. Troxell. Design is intelligent behavior, but what is the formalism? In First International Workshop on Formal Methods in Engineering Design, Manufacturing, and Assembly, Colorado Springs, Colorado, January 1990.

W. O. Troxell. A robotic assembly description language derived from task-achieving behaviors. In Manufacturing International '90, Atlanta, Georgia, March 1990. The American Society of Mechanical Engineers.

Wade O. Troxell, editor. Robotic assembly. Kinkos Professor Publishing, Spring 1990. ME/EE 572 course notes.

Wade O. Troxell, editor. Behavior-based robot control. Kinkos Professor Publishing, Fall 1990. ME/EE 581 course notes.

W. O. Troxell, D. H. Small, E. J. Kregel, and W. F. Maulsby. Automating the identification of perturbations within large manufacturing processes: A structured approach to process representation. Technical Report CIAI-TR- 89-03, Colorado Institute for Artificial Intelligence, University of Colorado, Boulder, Colorado, 80309-0419, March 1989. Final Grant Report.

G. R. Johnson, W. O. Troxell, and P. A. Fitzhorn. Design as computing, computing as design, National Technological University. NTU Satellite Network. Video course publication, 1989.

W. O. Troxell. A model for delivering dual-use technology, October 1989. An invited paper to AUTOFACT Conference in a forum entitled, Dual-Use Technology: A Competitive Strategy for the United States.

W. O. Troxell. A task-level description language expressed in terms of assembly behavior. In Fourth Annual Rocky Mountain Conference on Artificial Intelligence, Denver, Colorado, June 1989. Rocky Mountain Conference on Artificial Intelligence.

Wade O. Troxell, editor. Behavior-based robot control. Kinkos Professor Publishing, Spring 1989. ME/EE 581 course notes.

W. O. Troxell. Linguistic objective level planning for robotic assembly. In International Workshop on Robotics: Trends, Technology, and Applications, Madrid, Spain, September 1987. IEEE Industrial Electronics Society and Universidad Politecnica de Madrid and Society of Instrument and Control Engineers of Japan.

W. O. Troxell, P. A. Fitzhorn, H. H. Curtis, and G. K. F. Lee. Research activities in intelligent machines at Colorado State University. In Proceedings of the 1987 Rocky Mountain Conference on Artificial Intelligence, Boulder, Colorado, June 1987.

D. Small, J. Bell, M. Schroeder, B. Heyman, and W. O. Troxell. INTELMIL: An intelligent milling interface for a job shop. In Proceedings of the 1986 ASME Winter Annual Meeting, Symposium on Knowledge-Based Expert Systems in Manufacturing, Anaheim, California, December 1986.

W. O. Troxell and G. R. Johnson. ME senior design: The culmination of undergraduate computing experiences. In Proceedings of the 1986 ASME Computers in Engineering Conference, Chicago, Illinois, July 1986.

D. Small, J. Bell, S. Goodyear, LaPlante, and W. O. Troxell. Symbolic computing applied to engineering problem solving. In Proceedings of the 1986 ASME Computers in Engineering Conference, Chicago, Illinois, July 1986.

P. Fitzhorn and W. O. Troxell. A dynamic approach to the robotic design cycle. In Proceedings of the 1986 IEEE Conference on Robotics and Automation, San Francisco, California, April 1986.

W. O. Troxell. Duhamel's integral for a vibrating system. Technical Report 944, Hewlett-Packard User's Software Library, Hewlett-Packard, Corvallis, Oregon, 1982. Published software and report.

W. O. Troxell. An interactive variable force exercise system. In Proceedings of the 19th AIAA National Aerospace Sciences Conference, St. Louis, Missouri, January 1981.

Thesis and Dissertation

Wade O. Troxell. Systematics for automatic planning in robotic assembly, Ph.D. dissertation, Colorado State University, 1987.

Wade O. Troxell. An interactive variable force exercise system. Master's thesis, Colorado State University, August 1982.

Patents

Wade Troxell and Gerald Gibson. Patent Application Publication No. US 2007012402.6 Pub. Data: May 31, 2007. "Agent Based Auction System and Related U.S. Application Data Method for Allocating Distributed Energy Resources. Provisional application No. 60/741,353 filed on Nov. 20, 2005. Inventors Wade Troxell, Fort Collins, CO (US); Gerald Gibson, San Diego, CA (US).

Provisional Patents

Wade Troxell, Gearold Johnson, Jieqi Lin, and Tye Parzybok, "Semi-automatic Weighing Precipitation Gauge," U.S. Provisional Patent Application, April 25, 2016.

Bernard Rollin, Wade Troxell, Carl Kaiser, and Ross MacGregor, "Hypobaric Hypoxia Euthanasia Systems", filed with the United States Patent & Trademark Office April 9, 2009. The USPTO assigned Application No. 61/168,008.

Patent Disclosures

Wade Troxell, Gearold Johnson, Jieqi Lin, and Tye Parzybok, "Semi-automatic Weighing Precipitation Gauge," U.S. Provisional Patent Application, April 25, 2016.

B. Rollin, W. Troxell, C. Kaiser, R. MacGregor; "Hypobaric Hypoxia Euthanasia Systems;"
U.S. Provisional Patent Application, March 9, 2010.

W. Troxell and J. Gibson (AESC). "Power Neighborhood: an Agent Based Auction Process for Allocating Distributed Energy Resources, Provisional patent filed on November 30, 2005.

W. Troxell and G. Troxell. Slip shaft drive mechanism. Patent Disclosure, May 10 1994, to the Colorado State University Research Foundation.

W. Troxell, D. Alciatore, T. Segelhorst, B. Shogrin, L. Eisenbach, and R. Eckman. Shoulder continuous passive motion device. Patent Disclosure, September 5 1991, to the Colorado State University Research Foundation.

Contracts and Grants

Mechanical Engineering Senior Design, Total Sponsorship for 2022: \$395,000.

Troxell, W. O. (PI), "An applied wildlife disease challenge for the CSU Mechanical Engineering Department's Senior Design Project," Sponsored by USDA-APHIS-Animal Plant Health Insp Srvs, Federal, \$3,500.00. (September 1, 2022 - August 31, 2023).

Troxell, W. O. (PI), "An applied wildlife disease challenge for the CSU Mechanical Engineering Department's Senior Design Project," Sponsored by USDA-APHIS-Animal Plant Health Insp Srvs, Federal, \$10,000.00. (August 16, 2020 - May 31, 2022).

Farm Forward and Open Philanthropy, Bridge funding for "Evaluation of the Humaneness of Hypobaric Hypoxia Euthanasia in Broiler Chickens," \$33,000, 2018

Silicon Valley Communities Foundation, "Bridge Funding to LAPS Project," \$25,300.

Lincoln Institute of Land Policy and Sonoran Institute, Design & Facilitation of a Training Program for Colorado Communities on Integrating Water and Land Use Planning", \$40,000, 2017.

Smart systems for One Water: Connecting services to optimize community resource management. NSF Smart and Connected Communities, 16-610. 2017.

Congressional appropriation to establish the Smart Grid Integration Laboratory at Colorado State University, \$475K 1st year, \$900K 2nd year, 3 year duration 2009-2012.

U.S. Department of Homeland Security, Co-PI with Thomas Bradley (PI) and John Williams (Co-PI), SCAMP Fire Fighter Cooling and Breathing Apparatus: Test and Demonstration, \$917K, 2009-2012.

U.S. DOE Renewable Distributed Systems Integration, FortZED Demonstration Project, CSU PI, \$11.5M (CSU portion \$2M), 3 year.

Spirae, Inc., Continuous Power Supply, with Tom Bradley, \$10K, 2008-2009.

City of Fort Collins, "Northern Colorado Clean Energy Cluster Operations Fund," 2006-2007, \$20,000.

State of Colorado Governor's Office of Economic Development, "Project Grid – Establishment of CSU Grid Simulation Lab," 2006, \$125,000.

PETCO, "Hypobaric Hypoxia Proof-of-Concept," 2006-2007, \$55,000.

Raytheon GOES-R, "Physical Simulation Platform Development Project," 2005-2006, \$40,000.

Environmental Protection Agency P3 Award: A National Student Design Competition on Sustainability focusing on People, Prosperity, and the Planet, "Energy Management Innovation in the US Ski Industry, 2004-2005, \$10,000.

Colorado Space Grant Research Award, 2004, Principal Investigator, "Rescue and Recovery Robotics for Space Missions," \$8000.

Colorado Space Grant Research Award, 2003, Co-Principal Investigator, \$8000.

DOE SBIR, Alternative Energy Systems Consulting, Inc., Phase 1, 2003-2004, \$33,000.

Colorado Space Grant Research Award, 2002, Principal Investigator, \$8000.

CoCreate, Inc., Collaborative Design Software Testing, 1998-2000, Principal Investigator, \$64,000.

Storage Technology Corporation, Emergent Product Realization Process Research, MultiPlatform Business Group, 1997-1998 Sabbatical Leave support, \$204,683.

Piton Foundation, Manufacturing Works - Denver Workforce Initiative, 1997-2000, Principal Investigator, \$190,000.

Colorado Manufacturing Extension Center, Colorado State University, 1 year. 1997-98. Principal Investigator, \$180,000.

National Science Foundation, Directorate for Education and Human Resources. PhD Traineeships in Environmentally Conscious Manufacturing Project, 1995. Five years. Coprincipal investigator, \$562,500.

ASME Small Business Clearinghouse, 1 month, 1996, Principal Investigator, \$7200.

DOE Entrepreneurs' Technical Assistance Program, ADD SCAMP Production Development, Colorado Advanced Materials Institute, 1996-1997, Principal Investigator, 1 year, \$100,000.

Encorp, Web-enabling Technology Design, 1996, Principal Investigator, 3 months, \$19,263.

Small Business Development Centers, State of Colorado. Contract for joint SBDC/MAMTC projects, 1995. Principal investigator, 1 year, \$33,174.

Distortions Unlimited, Greeley, Colorado. Contract for robotic animations created for the Brutal Planet, 1995. Principal investigator, 3 months, \$20,607.

Colorado Campus Compact, Denver, Colorado. SEAMS grant for a service-learning project, 1995. Principal investigator, 1 year, \$3,268.

NIST/Mid-American Manufacturing Technology Center (MAMTC) and the National Institute of Standards and Technology. Contract with NIST/Mid-American Manufacturing Technology Center (MAMTC) to provide technical assistance to Colorado small to medium-sized manufacturers, 1994-1997. Principal investigator, 3 years, \$4,610,000.

Translogic, Manufacturing and Robotic Systems Laboratory. Denning Mobile Robot, 1994. Principal investigator, gift of a mobile robotic platform that features sonar ring and laser navigation systems valued at over \$30,000.

Denning Branch Robotics International, Manufacturing and Robotic Systems Laboratory. Denning Mobile Robot Upgrade Development Project, 1994. Principal investigator, \$8000. Contract to upgrade the controller on the Denning Mobile Robot Platform.

NIST/Mid-American Manufacturing Technology Center (MAMTC) and the National Institute of Standards and Technology. Contract with NIST/Mid-American Manufacturing Technology Center (MAMTC) to provide technical assistance to Colorado small to medium-sized manufacturers in nine NE counties, 1993. Principal investigator, 14 months of 5 years, \$740,000.

Rocky Mountain Trade Adjustment Assistance Center, University of Colorado, Boulder, Colorado. Contract for product development with High Country Contacts in Delta, Colorado, 1993. Principal investigator, 1 year, \$30,000.

Otsuka Electronics - Chemagnetics, Fort Collins, Colorado. Contract for research and development of a high-rate spin controller, 1993. Principal investigator, 6 months, \$45,000.

D and E Enterprises, Englewood, Colorado. Development of Smart Valve concept. , 1993. ME 404/405 Senior Design project, Principal investigator, \$ 7,000.

University of Massachusetts at Lowell, University of Massachusetts at Lowell, 1University Avenue, Lowell, Massachusetts 01854. Contract with University of Massachusetts at Lowell to provide lectures and administration for an NSF Faculty Development Program on the Concurrent Engineering at Colorado State University and the UMASS at Lowell, 1993. Co-principal investigator, \$10,960.

Storage Technology Corporation. Adept One robot, 1993. Principal investigator, loan of another Adept One robot with extensive vision capabilities including vision servoing valued at over \$100,000.

Goldco Industries, Laboratory equipment, 1993. Principal investigator, Gift valued at \$40,000.

Grant from the Martin Marietta Astronautics Group. Mars Micro-Rover Robotic Platform Development, 1992. Co-principal investigator, 1 year, \$10,000.

Grants from the Colorado companies to perform design for competitiveness product/process analysis, Manufacturing Excellence Center. Product Analysis, 1992. Principal investigator, \$5,000.

Colorado State University, Engineering Dean's Office. Summer Scholar, 1992. Principal investigator, \$2,500.

Colorado Advanced Software Institute, 1625 Broadway, Suite 700, Denver, Colorado. CASI Undergraduate Scholarship Program, 1991. Principal investigator, \$3,000.

Grant from the Colorado Office of Business Development. Colorado Supplier Industry Initiative Pilot Program, 1991. Co-principal investigator, 6 months, \$53,286. Project was awarded, but the funding was rescinded due to State budget shortfall.

Grant from the Colorado Advanced Software Institute in collaboration with Hydrogen Consultants, Inc. Goal-Directed, Self-Improving Control of Internal Combustion Engines, 1991. Co-principal investigator, 1 year, \$30,000.

Storage Technology Corporation, Manufacturing and Robotic Systems Laboratory. Collaborative Manufacturing Projects, 1988-91. Principal investigator, \$45,000 in cash.

Storage Technology Corporation, Manufacturing and Robotic Systems Laboratory. Adept One robot, 1991--present. Principal investigator, loan of an Adept One robot with vision capabilities valued at \$63,000.

U.S. Department of Agriculture, Denver Wildlife Research Center, Manufacturing Excellence Center, 1990. Principal investigator, \$1,500.

HydroGen Products, Inc., Manufacturing Excellence Center. Assessment of the Industrial Mixed Gas Electrolysis Unit, 1990. Co-Principal investigator, \$3,000.

Grant from the Colorado Institute of Artificial Intelligence in collaboration with Woodward Governor and Public Service Company of Colorado. A Self-Improving Behavior-based Controller for Internal Combustion Engines, 1990. Co-principal investigator, 1 year, \$30,000.

Grant from the Colorado Institute of Artificial Intelligence in collaboration with the Eastman Kodak Company. Fault Diagnosis of Large Physical Processes, 1990. Principal investigator, 1 year, \$30,000.

Colorado Institute for Artificial Intelligence, University of Colorado at Boulder. CIAI Undergraduate Scholarship Program, 1990. Principal investigator, \$3,000.

Colorado State University, Engineering Dean's Office. Summer Scholar, 1990. Principal investigator, \$2,500.

Colorado Advanced Technology Institute, Manufacturing Excellence Center. Manufacturing Assessment Workshop/Total Quality Management Conference, 1990. Co-Principal investigator, \$30,000.

Digitronics Sixnet, MARS Laboratory and Manufacturing Excellence Center. Industrial Control and Data Acquisition Equipment, 1990. Principal investigator, \$6,000.

CBW Automation, Manufacturing Excellence Center. World's Fastest Robot, 1990. Co-principal investigator, \$10,000.

Colorado State University, Engineering Dean's Office. Summer Scholar, 1989. Principal investigator, \$2,500.

Baker Instrument Company, Manufacturing Excellence Center. Armature Testing Apparatus, 1989. Principal investigator, \$5,000.

Apogee Robotics, Fort Collins, Colorado. Apogee Orbiter Automated Guided Vehicle, 1989. Principal investigator, \$24,000.

Public Service Company of Colorado, Denver, Colorado. Public Service Company of Colorado Fellowship in Computer Assisted Engineering, 1989. Graduate Student support. Principal investigator, \$21,500.

National Science Foundation Fellowship Award for scientific study and research at Edinburgh University in the Department of Artificial Intelligence. NATO Postdoctoral Fellowship in Science, 1988. Principal investigator, 12 months, \$25,579.

Hewlett-Packard Company, Loveland, Colorado. Assembly Equipment, 1988. Principal investigator, gift, \$20,000.

Grant from the Colorado Institute of Artificial Intelligence in collaboration with Kodak Colorado of the Eastman Kodak Company. Automating the Identification of Perturbations Within Large Manufacturing Processes, 1988. Principal investigator, 1 year, \$26,929.

Eastman Kodak Company, Kodak Colorado Division and the Colorado Institute of Artificial Intelligence. Symbolic Process Control, 1987. Principal investigator, 1 year, \$14,007.

Hewlett-Packard Company, Sunnyvale, CA. IBM 7565 Manufacturing System, 1986. Principal investigator, gift, \$140,000.

Eastman Kodak Company, Kodak Colorado Division. Computer Aided Design Implementation at KCD, 1985-1986. Principal investigator, 1 year, \$20,000.

Biomedical Research Support Grant. A Pilot Study in Rehabilitation Engineering: Variable Force Exercise System for the Physically Disabled, 1980-1981. Co-principal investigator, 1 year, \$4,000.

University Service

University Committees

- 2018-2019: CSU Presidential Search Advisory Committee

- 2016-present: Provost's Council on Engagement.
- 2012-2015: Graduate Education Advisory Committee
- 2009-2015 Conflict of Interest Committee
- 2010-2013: President's Carbon Advisory Committee, Co-Chair.
- 2008 – 2013: Clean Energy Supercluster, Leadership Team
- 2007 - 2009: President's Environment and Sustainability Committee
- 2007: Colorado Climate Project-Energy Supply Policy Working Group
- 2007: Regional Transportation Authority Citizen's Committee
- 2006-2007: Metro Denver Economic Development Corporation WIRED Initiative – Higher Education Panel representative
- 2004-present: Council of Research of Associate Deans
- 2006-2007: Graduate Education Advisory Committee.
- 2006: Colorado Renewable Energy Collaboratory, Executive Committee member.
- 2006-2007. Provost's Conflict of Commitment/Conflict of Interest Task Force.
- 2005-2006. Monfort Professorship Review Committee
- 2005 Agriculture Experiment Station Research Proposal Review Committee
- 2003-2007, Alumni Association Board
- 2002 PREVIEW CSU, College of Engineering
- The Center for Life Sciences and the Howard Hughes Medical Institute Undergraduate Biological Sciences Educational Program, K-12 Outreach Program, 1999-2000.
- President's Leadership Program
- Accion Colorado - Hispanic community program with President Yates, 1997.
- Early Advising Seminar at Yourplace (EASY) faculty advisor for Admissions, 1997.
- Presented the Outreach Model of the Manufacturing Excellence Center at the President's Fall Leadership Forum at the YMCA in Estes Park, 1996.
- Faculty Representative-at-large, NCAA Athletics Certification, Colorado State University, 1995--1997
- 1995 Classified Personnel Outstanding Achievement Awards Selection Committee.
- University Faculty Honors Council, College of Engineering, 1994-1999
- Provost's Ad-Hoc Tenure and Promotion Committee, 1992-1995
- Manufacturing Excellence Center "Made in Colorado" Excellence Award Presentations, 1991, 1992, 1993, 1994
- Admissions' Non-resident Orientation, 1992, 1993
- Cooperative Extension Director Advisory Search Committee, 1991-1992
- Athletic Director Advisory Search Committee, 1991
- Interim Provost Advisory Search Committee, 1991
- 1991-1992, Faculty Council Member
- 1991-1992, Faculty Council Committee Chair, Intercollegiate Athletics
- 1989-1992, Faculty Council Committee on Intercollegiate Athletics
- University Grievance Review Committee, 1990-1996
- Faculty and Staff Representative, 1990 Freedom Bowl Committee Member
- 1991 Keynote Address -- Colorado State Science Fair
- 1990 Keynote Address -- Denver, On Tour Colorado State

- 1985-1991, Operating Board of Directors, Colorado Institute on Artificial Intelligence
- 1991, 1990, and 1987, PREVIEW CSU
- 1989-1994, President, Board of Directors, Former Athletes Association

College Committees

- WSCOE Strategic Plan Implementation Committee – Imperative 3, Create and support successful educators, researchers, and staff, 2022.
- Distance Education Review Committee ad hoc, 2013.
- Economic Development Initiative, College of Engineering, 2005-2007.
- Equal Opportunity Coordinator, College of Engineering, 2004-2014.
- Diversity Committee, 2004- 2005, ex-officio member.
- College Curriculum Committee, 2002-2004.
- Alumni Giving Team, 2002-2003.
- Tau Beta Pi Faculty Co-Advisor, 1998-present.
- PRIST Project, Colleges of Business and Engineering, 1995-1997.
- Actively recruit student-athletes interested in engineering in cooperation with Athletic Dept., 1988-present.
- Engineering Building Pollution Prevention Ad Hoc Committee, 1996-1997.

Department Committees

- MECH 486 A/B Industry Sponsorship of Projects – 45+ projects each year, 2015-present. (CY22:\$395,000)
- Pi Tau Sigma, Faculty Advisor, 2004-2005.
- Faculty Search Committee, Mechanical Engineering, 2003-2004.
- ME Executive Committee, 2002-present.
- Chair, ME Working Group Committee, 2002-2004
- Faculty Search Committee, Mechanical Engineering, 2001-2002.
- Faculty Representative, Mechanical Engineering Advisory Panel, 1998-2005.
- Awards Committee, 1998-1999.
- Ad Hoc Strategic Planning Committee, 1996-1997.
- Graduate Affairs Committee, 1994-1997.
- Laboratory Equipment Committee, 1996-1997.
- ME Advisory Committee - Internship Subcommittee, 1995-1997.
- Actively place students as interns at area companies through direct interaction with companies, 1994-present.
- Departmental Awards Committee, 1992-1994
- Departmental Undergraduate Curriculum Committee, 1990-1992

Teaching and Course Development

Undergraduate Courses

- ME 192: Introduction to Mechanical Engineering
- IU 193: Freshman Seminar: Robotics and Autonomous Machines
- EG 102: Engineering Communication and Computer Graphics
- MECH 202: Engineering Design II - Mechanical Engineering Design Processes

- MECH 303: Energy Engineering
- ME 307: Mechatronics
- ME 324L: Mechanics of Machines Laboratory
- MECH 392: Graduate Education and Research Seminar
- ME 404/405: Senior Design
- ME 417: Automatic Control Systems
- ME 486 A/B: Senior Design Practicum

Graduate Courses

- ME 504: Advanced Engineering Design: e-Engineering Design
- ME 514: Manufacturing and Robotic Systems
- ME 519: Algorithmic Control
- ME 564: Robotics: Mechanics and Controls
- ME 565: Robotic Assembly
- EG 580 Entrepreneurship in Engineering
- MECH 580B5 – Artificial Intelligence and Design
- ME/EE 581: Behavior-based Robot Control
- ME 614: Product Development/Concurrent Engineering
- BUS 690: Business Immersion Experience
- ME 721: Advanced Topics in Design and Manufacturing

Graduate Students-Major Advisor

Grad Students In-Progress

Ph.D.:

- Christopher Manderino, Systems Engineering
- James Ku, Systems Engineering
- Erik Brodin, Mechanical Engineering (tent)
- Christopher Hurst, Mechanical Engineering (tent)

M.S.:

- Weston Dall, Mechanical Engineering

Grad Students Completed

1. Aderemi Shekoni, **PhD – Systems Engineering**, 2022, “Exploration Based Design Methodology Using The Theory of Constraints in Extending Plastics Manufacturing for Novel High Performing Fabrics.”
2. Douglas A. Hopper, **PhD**, 2017, “Anticipation Enhanced Behavior-Based Robotics Using Integrated System Dynamics.”
3. Jieqi Lin, **MS**, 2016, “Semi-automatic Weighing Precipitation Gauge,” Co-advisor Gearold Johnson.
4. Kurt Barth, **PhD**, 2016, “Explorative Design Methodology Applied to Thin Film Photovoltaic Product Development and Sustainable Practices,” Co-advisor W.S. Sampath.

5. Jirachote "Pong" Daosukho, **PhD**, 2012, "Performance and Reliability Evaluation of the Sacramento Demonstration Integral Compound Parabolic Concentrator Solar Collectors," co-advised with William Duff.
6. Carl Kaiser, **PhD**, 2009, "Interaction Space Abstractions: Design Methodologies and Tools for Autonomous Robot Design and Modeling."
7. Douglas Alan Hopper, **MS**, 2008, "Comparison of Fixed Action Patterns Used to Direct Mobile Robot Behavior."
8. Michael H. Conboy, **MS**, 2008, Object Identification for Landmark Localization in Urban Search and Rescue Situations."
9. Ross J. MacGregor, **MS**, 2008, Hypobaric Hypoxia Resulting from Gradual Decompression for a More Humane Method of Mouse Euthanasia."
10. Nathan Howard, **MS**, 2007, "Characterization and Performance Analysis of a 100 KW Physical Wind Turbine Simulator."
11. Erick Jacob Tuttle, **MS**, 2006, "Design of Computer Enclosures for Improved Serviceability."
12. Carl Kaiser, **MS**, 2006, "Interaction Space Constructs and Modeling for Application in Robot Design."
13. William J. Barnes, **MS** – Plan B, 2005, "Mapping the Interaction Space of Robot, Task, and Environment."
14. Paul A. Avery, **MS**, 2004, "Systems Dynamics Modeling of a Decentralized Electric Power Neighborhood Exploring Emergent System Behavior with Increasing Distributed Energy Resources (DER)."
15. Chris Sponheimer, **MS** – BME Plan C, 2004.
16. Nick Fernandez, **MS**, 2004, "A Positive-Reinforcement, Automated Exercise System to Control Intensity and Duration in Laboratory Animal Research."
17. David Paulus, **PhD**, 2003, "Interactive Variable Resistance Exercise Approach to Maximizing Force Output Based on Lifting Velocity."
18. Derek K. Feld, **MS**, 2003, National Technological University, Master of Science in Manufacturing Systems Engineering, John Deere Dubuque Works, Dubuque, Iowa.
19. Chad Headley, **MS**, 2003, National Technological University, Master of Science in Manufacturing Systems Engineering, Hewlett-Packard Company, Albany, Oregon.
20. Travis Kent Moulton, **MS**, 2003, National Technological University, Master of Science in Manufacturing Systems Engineering, Los Alamos National Laboratory, Los Alamos, New Mexico.
21. Christopher A. Sherbocker, **MS**, 2003, National Technological University, Master of Science in Manufacturing Systems Engineering, Graham Machinery Group, York, Pennsylvania.
22. Rodney E. Tegeler, **MS**, 2003, National Technological University, Master of Science in Manufacturing Systems Engineering, Raytheon Company, Tucson, Arizona.
23. Doyle Phillips, **MS**, 2002, National Technological University, Master of Science in Manufacturing Systems Engineering, Raytheon Company, Plano, Texas.
24. Michael P. Mathes, **MS**, 2002, National Technological University, Master of Science in Manufacturing Systems Engineering, Lockheed Martin Space Systems, New Orleans, Louisiana.
25. Victoria Martinez, **MS**, 2002, National Technological University, Master of Science in Manufacturing Systems Engineering, Lockheed Martin Corporation, Fort Worth, Texas.

26. Kenneth D. Eubanks, **MS**, 2002, National Technological University, Master of Science in Manufacturing Systems Engineering, Lockheed Martin Corporation, Fort Worth, Texas.
27. John J. Wood, **PhD**, 2002, "Design Methodology using Empirical and Virtual Analysis with Application to Compliant Systems."
28. Justin Downs, **PhD**, 2000, "Systems Design of a High-Resolution, Large-Data Set, Ultrasonic Tire Inspection Machine."
29. Keith Bearden, **PhD**, 2000, "Interactive Representation Based Minimalist Robot."
30. Steve Donnigan, **MS**, 2000, "Design of an Automated Sample Delivery System to a Flow Cytometer."
31. William R. Erickson, **MS**, 2001, National Technological University, Master of Science in Mechanical Engineering.
32. Donald G. McDonnell, **MS**, 2000, National Technological University, Master of Science in Manufacturing Systems Engineering, Texas Instruments Inc., Attelboro, MA.
33. Troy Nguyen, **PhD**, 2000, "A Method to Identify the Parametric Dynamic Model of a Single-shaft Gas Turbine Engine," co-advised with Bryan Willson.
34. Sushil Cherian, **MS**, 2000, "Communications Architecture for an Internet-enable Engine Test Cell," co-advised with Bryan Willson.
35. Philip Flocken, **MS**, 2000, "An Agent-based Product Data Management (PDM) Architecture for Managing Distributed Design Information."
36. Jason Fleischer, **MS**, 1999, "Method for Biomimetic Design of a Cooperative Mobile Robot System to Accomplish a Foraging Task."
37. Arthur "Bud" Vos, **MS**, 1999, "Integration of Control and Communication Processes for Internet Enabled Distributed Control Applications."
38. Ganesh Kuppuswamy, **MS** – Plan B, 1999.
39. Maria Medina, **MS**, 1998, "Incorporating a Computer Simulation into a High Mix / Low to Mid Volume Contract Manufacturer for Decision Making."
40. Steven Dominic, **PhD**, 1998, "Designing a Meta-Level Architecture in Java for Adaptive Parallelism by Mobile Software Agents."
41. Richard Coen, **MS**, 1997, "From High Tech Prototype to High Tech Production Using the Theory of Constraints as a Guiding Principle"
42. Daniel Byrne, **MS**, 1997, "A Work Flow Planning Tool, for a High Mix / Low Volume Printed Circuit Assembly Manufacturing Operation"
43. Daniel Doner, **MS** - Plan B, 1997.
44. Richard R. Maddox, **MS**, 1996, "A Behavior-based Architecture for an Interactive Entertainment Environment."
45. Jonathon S. Pointer, **MS**, 1996, "Improved Electromagnetic Device Design by Combining Air Gap Decomposition with Nonlinear Flux Density Mapping."
46. Paul H. Ford, **MS**, 1996, "Description of a Robot, Environment, and Task System Using the Theory of Affordances."
47. Daniel S. Johnson, **MS**, 1995, "Device Development for Decontamination and Survey of Radiological Contaminated Piping."
48. Elaine Linde, **MS**, 1995, "A Systems Approach to Improving the Pueblo Community College Machining Program with the Trane Company."
49. Justin Downs, III, **MS**, 1995, "Re-engineering the Denning MRV-3 into the CSU MRV-4 Velocibot."
50. Jerry D. Skoch, **MS** - Plan B, 1994, professional paper entitled, "Nonlinear System Control Using Fuzzy Logic."

51. Sunil Cherian, **PhD**, 1994, "Design and Description of Behavior Networks in Autonomous Robots."
52. Muhammad Muazzam Ali, **PhD**, 1994, "Exploration-based Design Synthesis of Behavior-based Autonomous Robots."
53. Ahmed Taha Aboldahab Farghaly, **MS**, 1993, "Methodology for Selecting a Hazardous Waste Disposal Site Using Layered Geographic Information."
54. Chun-An Lin, **MS** - Plan B, 1993.
55. Gabriel Jaime Valleho Bravo, **MS** - Plan B, 1993, professional paper entitled, "The Benefits of Flexibility in Manufacturing Processes and the Management Approach."
56. Christopher Fedde, **MS**, 1992, "Surface Triangulation of Branching Serial Sectioning Contours," co-advised with David Alciatore.
57. Alex Tsariounov, **MS**, 1992, "Design and Construction of a Pole Balancing Machine for Investigation of Neurocontrol Applications."
58. Vincent Huffaker, **MS**, 1991, "Fault Diagnosis of Large Manufacturing Processes."
59. Thomas Depkovich, **PhD**, 1991, "The Relationship Between Achieved Manipulator Impedance and Task Performance," co-advised with Jorge Aunon.
60. Sunil Cherian, **MS**, 1991, "Intelligent Behavior in Machines Emerging from a Collection of Interactive Control Structures."
61. Eric Krengel, **MS**, 1991, "Design and Construction of a Muscular Hydrostatic-like Robotic Structure."
62. Daniel Woodruff, **MS**, 1990, "Designing Controllers for Steering an Automated Guided Vehicle," co-advised with C. B. Winn.
63. Moses Eze, **PhD**, 1990, "Signature Analysis Technique for Diagnosing Failures in Mechanical Systems," co-advised with C. B. Winn.
64. Muhammed Ali, **MS**, 1990, "An Integrated Computer-Assisted 'Design Through Manufacture' (CADTM) System for Milling Operations."
65. Donna Boatwright, **MS** - Plan B, 1990.
66. Simon P. Yu, **MS** - Plan B, 1990.
67. Daniel Small, **MS**, 1988 (*in absentia* while on NATO Postdoctoral Fellowship), "A Structured Approach to Process Representation"

Civic Engagement

- Fort Collins Mayor, April 2015 to April 2021. Mayor Troxell was the 56th mayor of City of Fort Collins, Colorado's 4th largest city with 175,000 people.
- Fort Collins City Council Member representing District 4, 2007 - 2015.
- Co-Founder and Manager, International Cleantech Network.
- Co-Founder and Board Member, Colorado Clean Energy Cluster.
- Co-Founder and Board Member, Colorado Water Innovation Cluster.
- Support of FIRST Robotics: Poudre High School Alpine Robotics Team and the Colorado FIRST Robot Lego League competition, 1994-2010.
- Judged FIRST Colorado Regional Competition, Denver, Colorado 2005
- Judged FIRST Robot Lego League competition in Northern Colorado, 2001.
- Sponsored Poudre High School Alpine Robotics Team in FIRST competition in the RAM Laboratory, 2000-2010.
- Supported three ME students to assist Poudre High School FIRST Team, 1999.
- Financially sponsored FIRST Team from Poudre High School that competed in Chicago and Orlando, 1998.

- Volunteered in Poudre School District - including giving lectures as a part of Junior Achievement 1997, 1998.
- Gave presentations to a number of local groups on business, manufacturing, economic development, and entrepreneurship, 1989-present.
- Sponsor and make presentations to Young Scholars, MESA, and Odyssey of the Mind student groups (K-12) on science, engineering, and building “robots,” 1997-2004.

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